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REPLACEMENT OF SHIPBORNE AND RESCUE HELICOPTERS

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REPLACEMENT OF SHIPBORNE AND RESCUE HELICOPTERS*

ISSUE DEFINITION

Despite the end of the Cold War, the cancellation in November 1993 of the contract for the EH-101 helicopters, and cuts in the defence budget, discussion continues on the replacement of the Sea King shipborne helicopters and Labrador search and rescue helicopters of the Canadian Forces. This paper examines the reasons for these replacements and the options available.

BACKGROUND AND ANALYSIS

A. The Need for Replacement

1. Sea King Shipborne Helicopters

The Sea King helicopters that operate from Canada's new frigates and other warships entered into service in 1963. Designed primarily for anti-submarine warfare (ASW), the Sea Kings also provide Canadian warships with surveillance and transportation capabilities and occasionally participate in search and rescue operations.

The modernization of their ASW electronic sensors kept the helicopters fairly up-to-date in their primary role and routine maintenance and overhauls over the years have kept them in flying condition, despite their extensive use in difficult weather conditions. The older the Sea Kings become, however, the more maintenance they require and the greater the concern about their safety of operation.

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With this in mind, in the mid-1980s the Department of National Defence began the process of selecting new helicopters to replace the Sea Kings by the late 1990s. The EH-101 helicopter was chosen to replace both the Sea King and the Labrador (see Section 2 below). Contracts were signed in 1992 with EH Industries for 50 helicopters and with Paramax Canada for the supply of ASW and other electronic equipment for 35 of these aircraft. The total estimated costs of the purchase was some $5 billion, although only about half of the costs were for the airframes and engines, the ASW electronic sensors accounting for a substantial portion of the rest.

The cost of the new helicopters at a time when the armed forces of NATO and other countries were being cut at the end of the Cold War made the issue very controversial, even after the August 1993 announcement that the number of ASW EH-101s would be reduced to cut costs.

The contracts were cancelled by the Liberal government formed in November 1993, as the Liberal Party had promised during the federal election. However, because of the age of the existing helicopters and growing concerns as a result of a number of accidents, the replacement of the Sea Kings is still considered necessary, albeit at lower cost than that of the EH-101 project. Moreover, the shipborne helicopter remains an important element of Canada's military capabilities.

Although the submarine threat has greatly diminished with the end of the Cold War, military planners still consider it necessary for Canada's maritime forces to have some ASW capability, if only for the protection of Canadian warships involved in NATO or United Nations operations. Regardless of any ASW equipment, the helicopter replacing the Sea King would still complement the capabilities of Canadian ships by providing surveillance above and around them, by transporting supplies and personnel, and by carrying out rescue missions when required. Sea Kings were used extensively in the Persian Gulf and the Adriatic Sea, as well as for inspecting cargo ships as part of the enforcement of U.N. sanctions against Haiti; they were also used to transport supplies for UN peacekeepers in Somalia.

The selection of a replacement for the Sea Kings is also influenced by another factor, the need to replace the Labrador search and rescue helicopters.

2. Labrador Search and Rescue Helicopters

Canada operates 13 Labrador helicopters from CFB Comox, British Columbia, CFB Trenton, Ontario, and CFB Greenwood, Nova Scotia, as well as from other locations when required, solely for search and rescue operations. Like the Sea Kings, the Labradors entered service with the Canadian military in the early 1960s and the Department of National Defence began searching for a replacement during the mid-1980s. Around 1990, a decision was made to replace the Labradors with 15 transport versions of the EH-101, without ASW sensors but still capable of flying in bad weather conditions. By using the same type of helicopter to replace both the Sea King and Labrador helicopters, it was hoped to reduce maintenance and pilot training costs.

With the cancellation of the EH-101 purchase, the Labrador replacement remains an issue. At a time when Air Command is reducing the number of types of aircraft in its fleet to cut operational costs, the expense of maintaining a small fleet of aging rescue helicopters poses problems. As with the Sea Kings, there is also some concern about the effects of aircraft age on flying safety, notably since the April 1992 crash of a Labrador due to engine failure. A Labrador based at CFB Greenwood in Nova Scotia made an emergency landing on 1 May 1995 because of mechanical problems.

B. Options

1. Government's Position

On 31 October 1994, the Special Joint Committee on Canada's Defence Policy tabled a report recommending, among other things, quick action on the purchase of new shipborne and rescue helicopters. Following the completion of the parliamentary review, the Minister of National Defence presented the *1994 Defence White Paper* outlining Canada's new defence policy.

The white paper indicated that there was an urgent need for new shipborne helicopters and that the Sea Kings will be replaced by the end of the decade. The Labrador search and rescue helicopters will be replaced as soon as possible. While the same type of helicopter might be bought for both the shipborne and rescue roles, other possibilities were being explored,

such as different forms of partnership with the private sector for maintenance and even alternative financing arrangements for the purchase of replacement aircraft.

2. Modernization of Existing Airframes

The modernization of the existing airframes might appear to be less expensive than acquiring brand new aircraft; however, this option is less attractive in the long term because it simply delays the acquisition of new helicopters. The Sea King and Labrador airframes are over 30 years old and, even with extensive modifications, they would have to be replaced in five to ten years, or flown only occasionally.

Old aircraft are sometimes modernized to prolong their use; for example Australia is modernizing its Sea Kings to keep them in operation until about 2005. The Australian aircraft, however, were built some ten years later than the Canadian, so their modernization is more cost effective.

3. Purchase of New Helicopters

A wide variety of options is available to the government. It could buy new Sea Kings to replace the old Sea Kings and also the Labradors. Westland in the United Kingdom still produces the Sea King and recently delivered some designed for rescue operations to the Royal Air Force and the Norwegian Air Force. Indeed, many countries including Canada have used Sea Kings in the rescue role for a number of years; the Coast Guard has used an S-61 on the West Coast. With this option, Canada would get new airframes with recognized qualities at a good price and reap the benefits of using one type of aircraft to replace both the old Sea Kings and Labradors.

More modern helicopters, however, may have better fuel economy and lower maintenance requirements than the Sea King. The government has indicated that it is looking for a cheaper alternative to the cancelled EH-101, rather than a new helicopter with exactly the same performance in terms of speed, range and lifting capability. Thus, the government could buy new medium-sized helicopters with about the same performance characteristics as the Sea Kings and Labrador or smaller helicopters with less range and carrying capability, but also with a lower price.

Numerous types of medium-sized helicopters are available, including versions of the Eurocopter Super Puma (Cougar or Panther) and the Sikorsky S-70 (called the H-60 by the U.S. military). Some of these are already used by many countries in the ASW and maritime surveillance roles. A few types of Russian helicopters are available, but doubts have been raised about the costs of bringing them up to Western standards and about the availability of spare parts.

It was reported that Westland and Agusta, the partners in the EH Industries consortium, were proposing that Canada replace both the Sea Kings and Labradors with the civilian transport version of the EH-101, the Cormorant. The Cormorant has the same airframe and engines as the EH-101, but does not have the electronic equipment intended for the shipborne version. Slightly modified, however, it could be used for surface surveillance and electronic equipment for anti-submarine or other roles could be added over the years. The Cormorant is almost identical to the 15 transport versions of the EH-101 that had been slated to replace the Labradors. Other candidates, such as the S-92, which Sikorsky is developing in cooperation with Mitsubishi of Japan, and the NH-90, designed by a European consortium, are in the early production stage.

While small helicopters are cheaper and can carry out maritime surveillance and rescue duties, they may have less range or take a smaller load than medium-sized helicopters and cannot carry as many ASW sensors. Comparisons of different types of helicopters are tricky because, for example, one type might have less range than another, but could be equipped for air-to-air refuelling. Air Command has already received some of the 100 CH-146 Griffons (Bell 412s built in Canada) ordered in 1992 at a cost of $1 billion to replace almost all its small helicopters, such as the Twin Huey and Kiowa.

In any case, because of the difficult Canadian weather conditions, the new helicopters will require radar, navigation equipment and de-icing capabilities for the rotor blades. While it may not be possible to buy new surveillance and rescue helicopters that can operate in all weather conditions, some bad weather capability will have to be maintained to ensure the safety of flight personnel and to enable the aircraft to fulfil their missions. The costs of buying new helicopters with appropriate all-weather capabilities, while less than those for the EH-101, could still be quite significant. However, Canada may have little alternative if it wants to maintain its

current rescue capabilities, ensure the surveillance of its territorial waters, and fulfil its international commitments.

C. Developments in Early 1995

The February 1995 federal budget announced cuts in defence spending in addition to those introduced in the 1994 budget, but this did not affect the government's intention to go ahead with the replacement of the Sea Kings and Labradors. Indeed, budget documents indicated that the remaining Buffalo fixed-wing aircraft used for search and rescue on the west coast will be retired from service as soon as the replacement rescue helicopters arrive.

Shortly after the budget, on 31 March 1995, the government announced that it had reached an agreement with Unisys GSG Canada, formerly known as Paramax and now known as Loral Canada, the prime contractor for the electronic equipment on the shipborne version of the EH-101 helicopters Canada had ordered. The government will pay the company $166 million as compensation for the work completed prior to the cancellation of the EH-101 contract.

D. Proposals Considered by Cabinet

1. Delayed Approval

In June and July 1995, news reports stated that the Cabinet was considering departmental proposals for the acquisition of new military equipment, including new shipborne and rescue helicopters. Although the department had hoped for quick approval of the four acquisition projects, questions were apparently raised during Cabinet meetings with respect to the costs and the necessity for such acquisitions at a time of reduced government spending on social and other programs. There were also reports of concern among Cabinet members about the distribution of regional benefits if contracts were awarded.

As a result, only one of the four acquisition projects won quick Cabinet approval, the purchase of new armoured personnel carriers (APCs) and the modernization of existing ones, announced in August 1995. Final Cabinet approval for the acquistion of new shipborne and rescue

helicopters was delayed. The Minister of National Defence suggested that a final decision on both projects would be made before the end of the 1995-1996 fiscal year.

2. Shipborne Helicopter Project

According to news reports, the proposal presented to Cabinet concerning the shipborne helicopters was for the purchase of some 32 S-70 (or H-60) Sikorsky Seahawks declared surplus by the U.S. Navy. Instead of buying new S-70 airframes, the Department of National Defence apparently wanted to reduce costs by buying airframes that had been used but were not so old as the Sea Kings. This would leave enough funds to cover some modernization of the airframes and to add Canadian anti-submarine and surveillance equipment. Loral Canada, formerly known as Paramax and later as Unisys GSG Canada, was apparently slated to provide the electronic equipment. Although smaller than the EH-101 and Sea King, the used Seahawks could be equipped to fulfil the surveillance and anti-submarine role to about the same level of capability. The need to provide new electronic equipment instead of using U.S. equipment partly arises from differences between U.S and Canadian equipment and tactics.

Media reaction to the proposed purchase of used Seahawks was mixed. While some questions were raised about the necessity of buying these helicopters, there was also some criticism of the plan to buy old airframes instead of new ones. The issue became more controversial in July 1995 when the news media obtained a copy of a departmental memorandum which criticized the H-60 airframe as being too small to carry all the required equipment and for having characteristics that could hamper the crew's ability to escape quickly following a crash landing at sea. The Seahawk is basically a version of the UH-60 Black Hawk helicopter designed for the U.S. Army. The U.S. Navy has tried to improve its ability to stay afloat after an emergency landing, but there are still problems. For example, when a Japanese navy SH-60J crashed at sea in early July 1995, two crew members survived and were rescued, but the pilot was killed.

In early September, there were reports that the government was considering leasing the 32 or so shipborne helicopters in order to reduce the costs, or at least to spread them over a longer period of time. The government was already considering leasing new rescue helicopters to replace the Labradors; however, the leasing of combat aircraft would be an even more radical

departure from past practice. Even so, because it is concerned about how the public will react to the costs of this and other military equipment projects during budget cuts, the government appears determined to keep costs as low as possible.

3. Rescue Helicopter Project

As with the shipborne helicopters, the final Cabinet decision on the new search and rescue helicopters was delayed amid speculation that the government wanted a wider distribution of whatever regional benefits the project would generate. Although the Department of National Defence had not yet requested proposals, it indicated that it wanted a helicopter with a range of 500 nautical miles, capable of flying in light icing conditions and of carrying ten persons in addition to five crew members.

The candidates are expected to include the Westland-Agusta Cormorant, the Boeing CH-47D Chinook, the Eurocopter Cougar, the Russian-built Kamov 32 (modified by MacDonald Dettwiler and Associates of British Columbia), and a version of the Sikorsky UH-60 Black Hawk (similar to the Seahawk). Instead of dealing directly with the manufacturers, the department will likely establish a leasing agreement with a Canadian company already operating helicopters or similar equipment and which will buy the helicopters from the manufacturers.

E. Government Decisions

1. Announcement of Search and Rescue Helicopter Purchase

On 8 November 1995, the Minister of National Defence announced that the government had decided to proceed with the acquisition of new search and rescue helicopters. The acquisition costs were estimated to be $600 million, but leasing arrangements and the contracting out of maintenance were still considered options. The government is expected to decide in late 1996 which contractor will supply the new helicopters, making it possible for deliveries to begin in late 1998.

Following the announcement, the Department of National Defence sent manufacturers a Solicitation of Interest which contained the Statement of Operational Requirements

(SOR). The statement confirmed that the Department wanted helicopters with a range of 500 nautical miles and the ability to fly in light icing conditions. It also stated that a rear loading ramp, a glass cockpit (a state of the art instrument panel with video presentation of data) and autopilot were desirable. The manufacturers were expected to respond by the end of February 1996.

2. Delay of Shipborne Helicopter Purchase

No action was taken on the replacement of the Sea King helicopters, however, and in late 1995 and early 1996 there was considerable speculation about when and if the project would go ahead. There were news reports that the government was still considering the purchase of from 12 to 20 Sikorsky Seahawks at a price of U.S. $30 million each and would make a decision before the end of December. As a result, the controversy over the size and safety features of these helicopters continued, prompting Sikorsky to place newspaper ads defending its product.

The new year began with no decision and amid speculation in the news media that the government was having difficulty in deciding whether or not to acquire four Upholder class submarines from the United Kingdom and was therefore hesitating to go ahead with another purchase of expensive military equipment at the same time. The uncertainty ended shortly after the budget was tabled; the Minister of National Defence announced on 8 March 1996 that, because of additional cuts in the defence budget, the decision on the shipborne helicopter project had been deferred for an additional year.

The government's decision was criticized because, although the Sea Kings are expected to remain in service for another four years, some argued that they should be replaced as quickly as possible in view of the increasing costs of maintaining them and concerns about their safety. The one-year delay could still leave enough time to replace the Sea Kings before the end of their service life if existing helicopters, which could be delivered quickly, were to be acquired.

The purchase of helicopters not yet manufactured, however, would be more problematical, given the time necessary to build and deliver them. There was speculation that the Department of National Defence might begin with the purchase of a small number of helicopters and add more over the years. This would spread out the costs and allow the gradual replacement of the Sea Kings. Costs could also be reduced by delaying the installation of electronic equipment

in the airframes or leaving out some capabilities. A decision one way or another on the submarine purchase within the next year and the effects of this decision on the budget will likely significantly affect which option is chosen.

3. Final Chapter of EH-101 Project

The government's decision to proceed with the purchase of new rescue helicopters came at the same time as residual issues from the cancellation of the EH-101 project were being resolved. The agreement with Unisys GSG Canada in March 1995, on costs for the cancellation of the contract for electronic equipment slated for the EH-101, left outstanding only the cancellation costs for the contract with the airframe manufacturers.

On 9 November 1995, the Minister of Public Works and Government Services, David Dingwall, stated in the House of Commons that an agreement in principle on these costs had been reached with EH industries, the Westland-Agusta consortium. On 23 January 1996, the government announced the final terms of the agreement, which involved the payment of $157.8 million to EH Industries, made up of $136.6 million for work completed up to the cancellation and $21.2 million for termination costs. When added to the $166 million paid to Unisys GSG Canada and the $154.5 million for research and development and the costs of administering the project, the total spent on the EH-101 project is about $478.6 million.

F. Recent Developments

On 10 July 1996, the Westland-Agusta consortium announced that a number of Canadian aerospace companies had agreed to become part of its team for the rescue helicopter project. The companies include Bombardier Inc. of Montreal, CAE Inc. of Toronto, Bristol Aerospace of Winnipeg, and Canadian Helicopters Corporation of St. John's. According to many observers, this alliance with some of the major Canadian aerospace companies added credibility to the Westland-Agusta proposal because these companies have significant experience in aircraft maintenance (especially Bombardier)

and aircraft leasing (especially Canadian Helicopters). Other helicopter manufacturers were also seeking alliances with Canadian companies, while still others proposed new types of helicopter, such as the Mi-17KF Kittiwake, a Russian-built helicopter modified by Kelowna Flightcraft of British Columbia.

While the manufacturers were preparing their proposals, the Department of National Defence announced a six-month delay in issuing the Request for Proposals for the new search and rescue helicopters; that request is now scheduled to go out at the end of 1996. Indeed, the department announced on 21 August that there will be two Requests for Proposals, one for the helicopters and one for their maintenance. The latter will be issued in late 1997. Despite this delay, the delivery of the first new helicopter is still scheduled for early 1999.

Meanwhile, the Sea Kings and Labradors encountered some problems during the summer. On 23 August 1996, three of Canada's fleet of Sea Kings were grounded for the inspection and repair of cracks found in the tail section of the airframes. Though cracks were also found in the rest of the fleet, in different areas of the airframe, flight operations continued, pending repair at a later date. The three grounded Sea Kings returned to flight operations in early September. Cracks are often found in airframes, even in relatively new aircraft, and inspections are done on a regular basis in order to find them before they cause significant structural problems.

Questions were also raised in August about the lack of action in dealing with some of the recommendations resulting from the official inquiry into the April 1994 crash of a Sea King. The inquiry had recommended patching a hole in the cabin ceiling to prevent the leakage of fuel into the cabin and this had been done expeditiously; however, other recommendations were rejected by the military or have not been fully implemented. Meanwhile, there were news reports that the crews of Labrador helicopters had been instructed to carry out training flights over open fields rather than forested

areas in case of an engine failure. Such failures are apparently more and more common. A Labrador crash-landed in a forest in Nova Scotia in May 1995 as a result of mechanical problems.

PARLIAMENTARY ACTION

After a Sea King helicopter crashed on 28 April 1994, killing two crew members, the Minister of National Defence, David Collenette, was asked during Question Period in the House of Commons if swift action would be taken to replace the aging aircraft. The minister replied on 5 May that well maintained Sea Kings should be able to keep flying until the year 2000. He indicated that, like other defence issues, the replacement of the Sea Kings was being examined as part of the review of defence policy and that a decision would be taken only after the process was completed.

In its report *Security in a Changing World*, issued on 31 October 1994, the Special Joint Committee of the Senate and the House of Commons on Canada's Defence Policy recommended early action on the purchase of new shipborne and rescue helicopters to replace the Sea Kings and Labradors. In his response to the report, dated 1 December 1994, the Minister of National Defence noted that virtually all the Committee's recommendations were reflected in the *1994 Defence White Paper* issued the same day. Indeed, the white paper noted that the options available for the replacement of the shipborne and rescue helicopters were currently under consideration.

CHRONOLOGY

26 June 1986 - Treasury Board approval was given for start of project definition phase for New Shipborne Aircraft (NSA) to replace Sea Kings.

8 April 1988 - Definition contract for NSA was awarded to Anglo-Italian consortium after selection of EH-101.

15 March 1991 - The Department of National Defence merged planning for NSA and New Search and Rescue Helicopter (NSH).

30 April 1992 - A Labrador crashed in British Columbia during a rescue operation, killing one search and rescue technician.

8 October 1992 - The Canadian government signed contracts with E.H. Industries Ltd. and Paramax Canada for the delivery of 50 EH-101 helicopters to replace Sea Kings and Labradors.

27 February 1993 - A Sea King ditched in the Gulf of Mexico after suffering an electrical systems failure.

4 November 1993 - The new Liberal government announced the cancellation of the contracts with E.H. Industries Ltd. and Paramax Canada for EH-101s.

28 April 1994 - A Sea King crashed in New Brunswick, killing two crew members and injuring two others.

18 August 1994 - The Sea King fleet was temporarily grounded for the inspection of fuel leaks following an emergency landing by one aircraft.

31 October 1994 - The report of the Special Joint Committee of the Senate and the House of Commons on Canada's Defence Policy recommended quick action on the acquisition of new shipborne and rescue helicopters.

1 December 1994 - The White Paper on defence policy indicated that the government would go ahead with the replacement of the Sea Kings and Labradors in the near future.

31 March 1995 - The Canadian government and Unisys GSG Canada, one of the prime contractors for the EH-101 contract, reached an agreement on the payment of $166 million as compensation for the work done by the company prior to the cancellation of the contract.

1 May 1995 - A Labrador based at CFB Greenwood in Nova Scotia made an emergency landing because of mechanical problems.

25 July 1995 - The Cabinet held a meeting where it continued its examination of proposals for the acquisition of military equipment, but did not announce a final decision on the helicopters.

20 September 1995 - A Sea King made an emergency landing because of mechanical problems.

8 November 1995 - The government announced its intention to proceed with the acquisition of new search and rescue helicopters.

9 November 1995 - The Minister of Public Works and Government Services announced that an agreement in principle had been reached with EH Industries on the termination costs of the contract for the EH-101 airframes.

2 December 1995 - A Sea King from the new frigate HMCS *Calgary* rescued the crew of the bulk carrier *Mount Olympus* in distress in the Atlantic.

23 January 1996 - The government announced that the termination costs for the contract with EH Industries for the EH-101 airframes were $157.8 million.

8 March 1996 - The Minister of National Defence stated that a decision on the shipborne helicopter project would be deferred for an additional year.

10 July 1996 - The Westland-Agusta consortium announced that a number of Canadian aerospace companies, including Bombardier, CAE, Bristol Aerospace and Canadian Helicopters, had agreed to participate in its bid to obtain the contract for the rescue helicopter project.

23 August 1996 - Three of Canada's fleet of Sea King helicopters were grounded pending the inspection and repair of cracks found in the tail section of the airframe.

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